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EXAMINER	
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ART UNIT	PAPER NUMBER
2623	3

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/418,412	Applicant(s) WADA ET AL.	
	Examiner Anand Bhatnagar	Art Unit 2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,12-14,17-25,30,31,34-40 and 42* is/are rejected.

7)☒ Claim(s) *9-11,15,16,26-29,32,33 and 41* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-4,6-8,13,14,17-25,30,31,34-40, and 42 are rejected under 35 U.S.C. 102(e) as being anticipated by He et al. (U.S. patent 6,141,398).

Regarding claim 1: He et al. discloses an imaging system comprising:

an exam prescription subsystem (fig. 2 element 32 and col. 3 lines 32-35, where the SRU is taken as the "exam prescription subsystem" which controls the

scanning and the image reconstruction) which specifics the manner in which data is to be acquired; and

a visualization subsystem responsible for controlling display of acquired images and data (fig. 2 element 32 and col. 3 lines 33-35 and 40-42, where the SRU contains image generation controls).

Regarding claim 2: An imaging system further comprising a data acquisition system for acquiring scan data (fig. 2 element 42, col. 3 lines 46-48 and 51-54, where the SDS acquires the data) and an operator console (fig. 2 elements 24-30 and col. 3 lines 26-33, where the keyboard is taken as the console) comprising said exam prescription subsystem (fig. 2 element 32 and col. 3 lines 32-35, where the SRU is taken as the "exam prescription subsystem" which controls the scanning and the image reconstruction) and said visualization subsystem (fig. 2 element 32 and col. 3 lines 33-35 and 40-42, where the SRU contains image generation controls).

Regarding claim 3: An imaging system further comprising an archive subsystem for storage of imaging data (fig. 2 element 24, col. 4 lines 33-36, and col. 7 lines 20-25 and 28-30).

Regarding claim 4: An imaging system further comprising a filming subsystem for transferring data onto film (col. 7 lines 20-30).

Regarding claim 6: An imaging system wherein said exam prescription subsystem acquires parameter data comprising at least one of a sequence of slice locations, slice thickness, field-of-view, scanning technique, and

reconstruction algorithm (col. 4 lines 50-52 and col. 7 lines 22-25, where slice thickness, field of view, etc. are parameters which are obtained).

Regarding claim 7: An imaging system in accordance with Claim 6 wherein said parameter is contained in a scan protocol (col.7 lines 20-25, where multiple protocols are prebuilt for the parameters that will be obtained such as slice thickness, field of view, etc.)

Regarding claim 8: An imaging system wherein said visualization subsystem comprises a rendering component configured to receive data from at least one of a data acquisition system, a filtering component of said visualization subsystem, and a segmentation subsystem of said visualization subsystem, said rendering component configured to generate multiple images based on the acquired data in at least one of a real-time mode and a post-acquisition mode (col. 3 lines 41-43, col. 4 lines 45-53, and col. 8 lines 3-6, where the data is filtered to generate the images which are then displayed).

Regarding claim 13: An imaging system in accordance with Claim 1 wherein said visualization subsystem generates at least one volumetric model, and wherein projection of said volumetric model onto an image plane is accomplished using at least one of ray casting and texture mapping (col. 7 lines 33-36, where different reconstruction methods can be applied to create a 3-D image). It is inherent that ray casting is a common method to produce a three dimensional image from two-dimensional data. ~~Official Notice.~~

Regarding claim 14: An imaging system wherein said volumetric model is incrementally rendered (col. 4 lines 7-9, where the data gathering and displaying is performed in real time and updated incrementally).

Regarding claim 17: An imaging system wherein said rendering subsystem is operable in at least one of a single slice mode and a multiple slice mode (col. 2 lines 2-3 and col. 4 lines 45-46).

Regarding claim 18: An imaging system in accordance with Claim 1 wherein said system utilizes at least one of computed tomography, magnetic resonance, and ultrasound acquired data to generate an image (col. 4 lines 45-47, where a CT machine is applied).

Regarding claim19: A visualization subsystem for a medical imaging system, the medical imaging system including a data acquisition system (fig. 2 element 42, col. 3 lines 46-48 and 51-54, where the SDS acquires the data) for acquiring scan data, said visualization subsystem (fig. 2 element 32 and col. 3 lines 33-35 and 40-42, where the SRU contains image generation controls) comprising a processor programmed to render an image from data received from at least one of the data acquisition system, a filtering component of said visualization subsystem (col. 3 lines 41-43, col. 4 lines 45-53, and col. 8 lines 3-6, where the data is filtered to generate the images which are then displayed), and a segmentation subsystem (col. 7 lines 32-36 and col. 8 lines 3-5, where different image sets are displayed simultaneously) of said visualization subsystem.

Regarding claim 20: A visualization subsystem wherein to render an image, said processor is programmed to generate multiple images based on the acquired data in at least one of a real-time mode and a post-acquisition mode (col. 7 lines 32-36 and col. 8 lines 3-5, where multiple images are produced from gathered data).

Regarding claim 21: A visualization subsystem in accordance with wherein said processor is further programmed to apply image processing filters to the data received from the data acquisition system (col. 3 lines 41-43, where the data is filtered).

Regarding claim 22: A visualization subsystem wherein said processor is further programmed to classify data into separate categories (col. 8 lines 3-5, where the data, such as field of view, image sets, etc., is classified in separate windows of the display).

Regarding claim 23: A visualization subsystem in accordance wherein said processor is further programmed to perform measurements on the data, said measurements comprising at least one of distance, surface area, volume, regions of interest, and calcification scoring (col. 2 lines 3-6 and 26-27, where the data is processed by an algorithm to produce a 3-D image).

Regarding claim 24: A visualization subsystem wherein the image is rendered in at least one of a real-time mode and a post-acquisition mode (col. 4 lines 7-8, where the data gathering, processing, and displaying is performed in real time).

Regarding claim 25: A visualization subsystem wherein said processor is further programmed to annotate patient and scanning information (col. 3 lines 27-30 where the scan information and patient information is displayed on the monitor).

Regarding claim 30: A visualization subsystem wherein said processor generates at least one volumetric model, and wherein projection of volumetric model onto an image plane is accomplished using at least one of ray casting and texture mapping (col. 7 lines 33-36, where different reconstruction methods can be applied to create a 3-D image). It is inherent that ray casting is a common method to produce a three dimensional image from two-dimensional data. Official Notice.

Regarding claim 31: A visualization subsystem wherein said volumetric model is incrementally rendered (col. 4 lines 7-9, where the data gathering and displaying is performed in real time and updated incrementally).

Regarding claim 34. A visualization subsystem wherein the scan data at least one of computed tomograph, magnetic resonance, and ultrasound acquired data (col. 4 lines 45-47, where a CT machine is applied).

Regarding claim 35: A method for operating a medical imaging system (col. 1 lines 7-9) to generate three dimensional models (col. 2 lines 24-28, where a 3-D image is produced) while the system acquires cross-sectional data (col. 4 lines 45-47), said method comprising the steps of:

acquiring a first slice of data (col. 4 lines 45-47); and

generating a three dimensional model based on the first slice of data (col. 7 lines 52-60).

Regarding claim 36: A method in accordance wherein generating a three dimensional model comprises the step of filtering-the data (col. 3 lines 40-43 and col. 4 lines 17-20).

Regarding claim 37: A method in accordance wherein generating a three dimensional model comprises the step of classifying the data into separate categories (col. 8 lines 3-5, where the data, such as field of view, image sets, etc., is classified in separate windows of the display).

Regarding claim 38: A method in accordance further comprising the step of performing measurements on the data, the measurements comprising at least one of distance, surface area, volume, regions of interest, and calcification scoring (col. 2 lines 3-6 and 26-27, where the data is processed by an algorithm to produce a 3-D image).

Regarding claim 39: A method in accordance with Claim 35 wherein generating a three dimensional model comprises the step of annotating patient and scanning information (col. 3 lines 27-30 where the scan information and patient information is displayed on the monitor).

Regarding claim 40: A method in accordance with Claim 35 wherein generating a three dimensional mode comprises incrementally updating a three-dimensional view of the data (col. 4 lines 7-9, where the data gathering and displaying is performed in real time and updated incrementally).

Regarding claim 42: A method in accordance wherein generating a three dimensional mode comprising the step of projecting the model onto an image plane using at least one of ray casting and texture mapping (col. 7 lines 33-36, where different reconstruction methods can be applied to create a 3-D image). It is inherent that ray casting is a common method to produce a three dimensional image from two-dimensional data. Official Notice.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over (He et al. 6,141,398).

Regarding claim 5: An imaging system further comprising a networking subsystem that transfers data via a network to external devices.

He et al. discloses a CT imaging system whereby slice data is gathered and a 3-D image is created using this data in real time. He et al. does not disclose to have the computer set up as a network for outside access. It would have been obvious to one skilled in the art to have this type of system hooked up

to a network for the purpose of monitoring from a remote location or for teaching purposes so many people can access the procedure in real time.

Regarding claim 12: An imaging system in accordance wherein said visualization subsystem is configured to operate in a review display mode, said review display mode comprising at least one of a playback mode and a repeat loop mode.

He et al. discloses a CT imaging system whereby slice data is gathered and a 3-D image is created using this data in real time. He et al. also discloses to archive the data onto a hard drive. He et al. does not teach to have a review mode as a configured option in the system. It would have been obvious to one skilled in the art to have some type of review option configured to the imaging system so that the procedure can be reviewed, at the time of the procedure, if needed, in order to confirm any question that may have arisen about the procedure during the procedure.

Allowable Subject Matter

3. Claims 9-11,15,16, 26-29,32,33, and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hashimoto et al. (US patent 6,245,017) for a real time 3-D imaging apparatus.

Vining (U.S. patent 6,272,366) for a volume formation and segmentation device.

Quistgaard (U.S. patent 5,485,842) for a 3-D display and processing system.

Oxaal et al. (U.S. patent 5,546,807) for a imaging device whereby copies are made for remote locations.

5. Any inquiry into this communication should be directed to Anand Bhatnagar whose telephone number is 703-306-5914, whose supervisor is Amelia Au whose number is 703-308-6604, group receptionist is 703-305-4700, and group fax is 703-872-9314.

AB

Anand Bhatnagar

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August 12, 2002